

Obesity 2018: Influence of L-carnitine on the expression level of adipose tissue miRNAs related to weight changes in obese rats-Maryam Nazari-Ahvaz Jundishapur University of Medical Sciences, Iran

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Background: The molecular mechanisms of most anti-obesity drugs remain unclear. MicroRNAs that are non-coding RNA molecules supposedly regulate the biological processes concomitant with obesity and have attracted much attention in the scientific communities. In this study we investigated the expression levels of miR-27a and miR143 in obese and non-obese rats during weight changes and the effects of L-carnitine (LC) on them.

Background: The molecular mechanisms of most anti-obesity drugs remain unclear. MicroRNAs that are non-coding RNA molecules supposedly regulate the biological processes concomitant with obesity and have attracted much attention in the scientific communities. In this study we investigated the expression levels of miR-27a and miR143 in obese and non-obese rats during weight changes and the effects of L-carnitine (LC) on them.

Results: After 12 weeks, HFD compared to NFD caused a significant decrease and increase in the expression levels of miR27a and miR-143 respectively. These changes were modified in groups that had received LC in a period of 4 weeks. Furthermore, rats in this group gained less weight. **Main conclusions:** The results of this study suggest that changes in microRNA expression probably play a role in the pathogenesis of obesity. They can be modulated by means of dietary agents and supplements and modify the tendency of weight gain.

Obesity has become a worldwide epidemic and has detrimental effects on quality of life, increases mortality and morbidity rates by increasing the risk of different complications such as cardiovascular diseases, some types of cancer and metabolic syndrome. According to the Center for Disease Control and Prevention (CDC), the costs of medical payments related to

overweight and obesity in the US. USA They were approximately \$ 75 billion in 2003 and reached an annual rate of \$ 147 billion^{1,2} in 2008.

As a result, a growing demand for safe and effective anti-obesity medications emerges from this phenomenon, which the American Medical Association recognized as a disease in 2013. Unfortunately, different strategies, such as diet, physical activity, surgery, and medication, have been limited. success.

Furthermore, many anti-obesity drugs are withdrawn from the market due to their serious adverse effects³. Therefore, pursuing appropriate action to control obesity is a priority. In this regard, the growing interest in the study of epigenetic regulatory mechanisms during the development of obesity has specified some research on microRNAs. Furthermore, many anti-obesity drugs are withdrawn from the market due to their serious adverse effects³. Therefore, seeking appropriate action to control obesity is a priority. In this sense, the growing interest in the study of epigenetic regulatory mechanisms during the development of obesity has specified some research on microRNAs Several miRNAs appear to be out of regulation in obese and human animals, however little is known about the exact role of these small molecules in metabolism, particularly in adipose tissue.

Research on miRNAs has shown its role in different complications such as cancer, neurological, autoimmune, metabolic and cardiovascular diseases. Understanding the genetic targets of miRNA, which regulate adipogenesis through its pro or anti-adipogenic functions, can detect new pathways in metabolic diseases, such as obesity, and influences future approaches to its treatment.